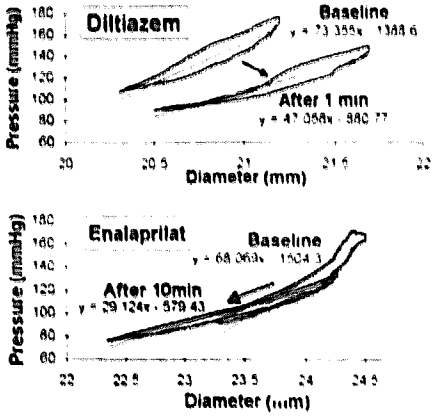
in the treatment of hypertension, their effect on the elastic properties of the aorta and the mechanisms involved have not been defined.

Methods: Serial pressure-diameter loops were obtained in 20 hypertensive pts before and for 20 min after i.v. infusion of diltiazem (DL, 10 pts, 0.15 mg/kg over 2 min) or enalaprilat (EN, 10 pts, 1.25 mg over 5 min). Aortic diameter was measured by an ultrasonic intravascular catheter developed in our institution (Circulation 1995; 92: 2210–9). Ao pressure was measured simultaneously by a Millar catheter.

Results: Aortic distensibility increased after both DL and EN (from 1.3 ± 0.3 to 1.9 ± 0.5 and from 1.2 ± 0.3 to 2 ± 0.4 10^{-6} cm^2 $dyne^{-1}$, respectively, $p < 0.001$ for both). While improvement in aortic elasticity after DL was active, (loop shifting toward the left, left fig) due to alteration of the intrinsic aortic elastic properties, the one after EN was passive (loop sliding along the same hypothetical line of elasticity, right fig) due to blood pressure reduction alone.



Conclusion: Both DL and EN improve aortic elastic properties in hypertensive patients, however, different mechanisms of action are involved.

1052-48 Plasma Levels of Soluble E-Selectin in Patients With Mild to Moderate Hypertension Treated by a Calcium Antagonist or a I_1-Imidazoline Agonist

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Background: Not all antihypertensive treatments have the predicted beneficial effect on atherosclerotic vascular disease and this may be due to their failure to regulate endothelial cell dysfunction associated to hypertension. E-Selectin, a surface molecule expressed on activated endothelial cells, is implicated in the very early stages of atherosclerosis by mediating adhesion of leukocytes to endothelium. The aim of this study was to evaluate the effect of a calcium antagonist isradipine SRO and a I_1-imidazoline agonist moxonidine on plasma levels of soluble E-Selectin (sE-Sel) proposed as marker of early endothelial dysfunction.

Methods: Fifty two patients (pts) with mild to moderate hypertension, divided in two groups (group A: 24 pts treated by isradipine SRO, 4 mg daily and group B: 28 pts treated by moxonidine, 0.4 mg daily) were evaluated for heparine plasma levels of sE-Sel, measured by ELISA, before and after four months of therapy and compared to 31 age and sex matched controls. Before treatment, groups A and B did not differ in any of systolic and diastolic blood pressure (SBP and DBP, respectively), age, body mass index, left ventricular mass index or total peripheral resistances.

Results: The results are summarized in the following table:

Parameter	Controls	Group A	Group B
sE-Sel (ng/mL) before	23.6 ± 1.8	37.9 ± 2.9*	36.2 ± 2.8*
after		32.5 ± 2.1*▲●	37.1 ± 3*▲●
%Δ		-11.9 ± 4.1	2.5 ± 1.5
SBP (mmHg) before	114.2 ± 1.3	157.6 ± 3.2*	161.4 ± 3.9*
after		123.6 ± 3.9▲	133.1 ± 2.1*▲
%Δ		-21.4 ± 2.7	-17.1 ± 1.8
DBP (mmHg) before	80.1 ± 2.3	102 ± 1.3*	10..1 ± 1.1*
after		80.2 ± 2.1▲	86.4 ± 0.7▲
%Δ		-21.3 ± 2	-14.7 ± 0.9

1) %Δ: percent differences, 2) significant differences ($p < 0.05$) in comparison to corresponding values: a) of controls (*), b) before the respective treatment (▲) and c) after the comparable treatment (●)

In group A, significant negative correlation was found between DBP before treatment and %Δ of sE-Sel plasma levels ($r = -0.7$, $p = 0.03$). No other significant correlations were found.

Conclusions: It is suggested that, in mild to moderate hypertension, treatment with isradipine SRO may be more effective than treatment with moxonidine in regulating endothelial cell function at least by decreasing plasma levels of sE-Sel proposed as marker of endothelial dysfunction and this is not related to the effectiveness of antihypertensive treatment in decreasing SBP or DBP. In addition, isradipine SRO treatment seems to be less effective in decreasing plasma levels of sE-Sel for pts with high DBP than for those with low DBP before treatment.

1052-49 Aortic Atheroma in Hypertensive Patient: May Ambulatory Blood Pressure Data Predict Severity?

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Hypertension (HT) is a determinant factor of atheroma development. The aim of this study was to assess if there was a relationship between data of 24 hours ambulatory blood pressure (ABP) and severity of thoracic aortic atheroma in hypertensive patients. We studied 65 patients (44 men, 21 women), mean aged 66.2 ± 11.4 years, with HT and past cerebral vascular event. ABP recordings were performed every 15 minutes during the day (D), and 30 minutes during the night (N). Atheroma was evaluated by transesophageal echocardiography. We used a scoring index (SI) including the sum of plaque thickness (PT: <2 mm: 2 to 4.9 mm: >5 mm) and diffusion: number of involved aortic segments (ascending, horizontal, descending). Persistent HT was assessed on D and N means ABP, according to Staessen's meta-analysis. Dippers were patients who decreased systolic N > 10 and diastolic N > 5 percents. Monovariate results: there was no relation between PT or SI and sex, obesity, diabetes mellitus. Age was related to PT ($p = 0.005$) and SI ($p = 0.022$). PT was more severe in persistent HT ($p = 0.022$). Multivariate regression including age and means ABP showed an increase of SI and PT with age ($b = +0.06$ $p = 0.03$, $b = +0.04$ $p = 0.01$), diastolic D ABP ($b = +0.32$ $p = 0.0008$, $b = +0.18$ $p = 0.0018$), systolic N ABP ($b = +0.17$ $p = 0.0008$, $b = +0.09$ $p = 0.0018$), and with decrease of systolic D ABP ($b = 0.21$ $p = 0.0005$, $b = 0.11$ $p = 0.002$) and diastolic N ABP ($b = 0.29$ $p = 0.0008$, $b = 0.16$ $p = 0.0009$). Multivariate correlations SI: $r = 0.49$, $p = 0.0065$ and PT: $r = 0.49$ $p = 0.005$. Adjusted means dippers/non dippers for SI: 0.27 ± 0.45/2.52 ± 0.27, $p = 0.0006$ and for PT: 0.29 ± 0.23/1.45 ± 0.14, $p = 0.0005$. In conclusion, ABP may be a marker of aortic atheroma severity in patients with hypertension.

1052-50 Arterial Compliance and Hypertensive Left Ventricular Geometry

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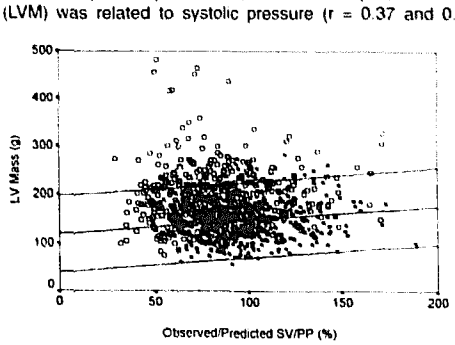
Background: We have previously reported that the ratio between stroke volume (SV, M-mode echocardiography, Teichholz') and pulse pressure (PP) in adults is a measure of arterial compliance that is related directly to body weight and negatively to age and heart rate, by a multiple linear equation, which has been re-computed using a new validated method (z-derived) for determination of M-mode volumes.

Methods: The ratio of observed-to-predicted SV/PP (%ΔSV/PP) was calculated in our reference population of 393 normal adults and the normal 95% confidence interval was determined (71.6–139.3%). %ΔSV/PP was computed in 491 hypertensive patients (HPTS, 161 women, 228 overweight; 53 ± 10) and 537 normal controls (NOR, 224 women, 149 overweight; 46 ± 12 years, $p < 0.0001$).

Results: Low %ΔSV/PP (<71.6%) was present in 39 NOR (7.3%) and 204 HPTS (41.5%, $p < 0.0001$). In both NOR (—) and HPTS (), LV mass (LVM) was related to systolic pressure ($r = 0.37$ and 0.22) and, weakly,



to %ΔSV/PP (r = 0.16 and 0.09). At comparable levels of %ΔSV/PP or SV/PP, HPTS exhibited higher LVM than NOR (p < 0.001). Prevalence of LV hypertrophy was similar in patients with low or normal %ΔSV/PP (36.3 and 39%). In contrast, low %ΔSV/PP was strongly associated with high relative wall thickeness (>0.44) in both NOR (13% vs 2%, p < 0.004) and HPTS (34% vs 16%, p < 0.0001), in univanate as well as in multivanate analyses.

Conclusions: Reduced arterial compliance influences LV remodeling in arterial hypertension, but does not affect the magnitude of LV hypertrophy.

1052-51 Assessment of Arterial Compliance by Carotid Midwall Strain-Stress Relation in Hypertension

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Background: The relationship between arterial wall hypertrophy and compliance in hypertension has not been fully elucidated.

Methods: We studied 206 unmedicated hypertensive patients and 82 normotensive adults by carotid ultrasonography, echocardiography and applanation tonometry. Carotid midwall strain (mws) and circumferential midwall stress (mwσ) at end-diastole and peak-systole were calculated by a cylindrical model. Relations of both carotid luminal and midwall strain to the increment in mwσ from end-diastole to peak-systole (Δ delta) in normal subjects were used to calculate the ratios of observed/predicted carotid luminal and mws in patients.

Results: Stress-corrected midwall strain identified reduced arterial compliance in 9% of hypertensives. Patients with subnormal mws were older (62 ± 11 vs. 54 ± 12 years, p = 0.01), had larger carotid diameters (6.59 ± 0.82 vs. 5.80 ± 0.83 mm, p < 0.001) and higher pulse pressures (74.7 ± 27.1 vs. 63.0 ± 17.6 mm Hg, p = 0.01) than other patients. Patients with arterial wall thickness >1 mm had lower stress-corrected midwall strain than those with arterial wall thickness <1 mm (70.1 ± 24.0 vs. 79.3 ± 22.7%, p = 0.05), but no difference was observed in stress-corrected luminal strain (p = 0.40). Compared to patients with normal left ventricular (LV) geometry and concentric remodelling, those with concentric hypertrophy had lower stress-corrected luminal strain (61.7 ± 11.4 vs. 84.9 ± 24.5%, p = 0.02) and mws (58.9 ± 9.9 vs. 81.3 ± 22.3%, p = 0.009).

Conclusion: Stress-corrected mws identifies patients with reduced arterial compliance, increased arterial wall thickness and abnormal LV geometry.

1052-52 Are there Differences in Arterial Stiffness Between Normotensive Whites and African Americans?

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Background: Although African Americans (AA) are known to have a higher incidence of hypertension than whites (W) in the U.S., whether racial differences in arterial stiffness exist between normotensive AA and W is unknown.

Methods: To examine this question, we measured aortofemoral pulse wave velocity (PWV) and the late systolic augmentation index (AGI) of the carotid arterial pressure wave from applanation tonometry in 402 W (214 F and 188 M) and 91 AA (53 F and 38 M) ages 20 to 96 years from the Baltimore Longitudinal Study of Aging. All subjects were normotensive and free of cardiovascular medications and disease by history, physical exam and resting and exercise ECG.

Results: Both groups were similar with respect to gender distribution, age, height, weight and systolic and diastolic blood pressures. In both AA and W, systolic blood pressure (SBP), PWV and AGI increased with age (all p < 0.02). By analysis of covariance AA had a tendency toward higher SBP than W across the age span (p = 0.06), although the rates of increase of SBP with age in W and AA, respectively (0.25 ± 0.4 vs 0.22 ± 0.3 mm Hg/yr; p = 0.8) were similar. There were no racial differences in AGI across age, but PWV increased more rapidly with age in AA than W (12.8 ± 16.7 vs 7.8 ± 11.5 cm/s/yr; p = 0.004). On multiple linear regression both age and SBP (all p < 0.0005) were positive predictors of AGI and PWV, while female sex predicted higher AGI (adjusted for height) (p = 0.0001). Race, however, was not an independent predictor of either AGI or PWV.

Conclusion: Thus in this carefully screened healthy population, differences in arterial stiffness between AA and W across the adult life span appear to be relatively minor.

1053 Identifying and Treating Cardiovascular Risk in the Elderly

Monday, March 30, 1998, Noon–2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.–2:00 p.m.

1053-65 Prevalence of Carotid Sinus Hypersensitivity (CSH) in Older Attendee's to Accident and Emergency (A&E) With Falls

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Background: Up to 30% of cardiovascular syncope in older subjects presents as "unexplained" falls. At a large regional syncope facility CSH is one of the commonest attributable causes of "unexplained" on accidental falls.

Objective: To ascertain the prevalence of CSH in older attendee's to A&E with "unexplained" or "recurrent" falls (3 or more falls in previous year), with a view to a randomised control trial of cardiac pacing intervention for falls attributed to CSH.

Results: 51,860 consecutive A&E attendee's aged 50 years or over were screened of whom 35% attended because of a fall. 2575 falls were "unexplained" or "recurrent". Of these, 34% declined further study and 9% had contraindications to carotid sinus massage (CSM; carotid bruit, recent stroke, myocardial infarction or ventricular dysrhythmia). CSM (supine and tilted upright to 70° with simultaneous ECG and phasic BP measurement) was carried out in 1143 patients; 181 had cardioinhibitory or mixed and 141 had vasodepressor CSH. CSH prevalence increased with age (50–59 yrs 12%, 80–89 yrs 49%).

Conclusion: Over a third of older adults attend A&E because of a fall, 14% with "unexplained" or "recurrent" falls. 28% of this group had CSH, 16% had a cardioinhibitory or mixed responses which might be amenable to pacing intervention response (28% of the over 80's). Therefore cardiovascular assessment is clearly indicated in these subjects and should be incorporated into guidelines for A&E practice.

1053-66 Self-rated Health Assessment and the Development of Cardiovascular and Dementing Illnesses in the Old: A Report From the Bronx Longitudinal Aging Study

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Self-rated health assessment (SRHA) was assessed as a possible independent predictor of cardiovascular events (myocardial infarction, cerebrovascular accident) and dementia (Alzheimer's type and multi-infarct) in an old old ambulatory non-demented cohort (n = 487, mean age 79 yrs, 65% female). At baseline, subjects were asked to rate their current SRHA as excellent, good, fair or poor, and they were followed annually for up to 10 yrs. Clinical diagnoses were made according to established criteria. The SRHA was reported as excellent by 45 persons (9.4%), good by 212 (44.4%), fair by 178 (37.3%), and poor by 42 (8.8%). Using a multivariate analysis, subjects whose SRHA was poor vs excellent were 4.5 times more likely to have a fatal cardiovascular event (p < 0.004), 2.6 times more likely to have a non-fatal cardiovascular event (p < 0.03), and 5.3 times more likely to develop Alzheimer's and multi-infarct dementia (p < 0.005). Similar findings were observed with dichotomous SRHA responses (comparing excellent-good vs fair-poor). A SRHA in an elderly population appears to be an independent predictor of future cardiovascular and cerebrovascular events and the development of all-cause dementia.

1053-67 Stroke Incidence in the Placebo-controlled Chinese Trial on Isolated Systolic Hypertension in the Elderly

L. Liu, L. Gong, J.G. Wang. *For the Syst-China Investigators; Cardiovascular Institute and Fuwai Hospital, Beijing, China*

Background: In 1988 the Syst-China Collaborative Group initiated the placebo-controlled Syst-China (Systolic Hypertension in China) trial to investigate whether antihypertensive drug treatment would reduce the incidence of stroke in elderly Chinese patients with isolated systolic hypertension (SBP/DBP ≥ 160/<95 mmHg).

Methods: After stratification for sex and cardiovascular complications, 2379 patients were alternatingly allocated to active treatment or placebo. Active treatment consisted of nitrendipine with the possible addition of captopril or hydrochlorothiazide, titrated or combined to reduce the sitting SBP by ≥20 mmHg to <150. Matching placebo tablets were employed similarly.